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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,847	05/14/2001	Brian Mathur	LEX-0173-USA	8347

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EXAMINER	
SMITH, CAROLYN L	
ART UNIT	**PAPER NUMBER**
1631	

DATE MAILED: 01/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/854,847	MATHUR ET AL.	
	Examiner	Art Unit	
	Carolyn L Smith	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,3,5 and 6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,3,5 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

In view of the Appeal Brief filed on 10/28/03, PROSECUTION IS HEREBY REOPENED. Details are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

The finality of the Office action, mailed 4/22/03, is hereby withdrawn due to the new grounds of rejection as summarized below in this action.

Applicant's remarks, filed 10/28/03, are acknowledged.

Applicant's arguments, filed 10/28/03, have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from the previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Claims 2, 3, 5, and 6 are herein under examination.

LACK OF UTILITY UNDER 35 U.S.C. § 101:

The pending claims have been reviewed in light of the Utility Examination Guidelines and Guidelines for Examination of Patent Applications under 35 U.S.C. 112, first paragraph, "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1092-1111, Friday, January 5, 2001.

The examiner is using the following definitions in evaluating the claims for utility.

"Specific" - A utility that is *specific* to the subject matter claimed. This contrasts with a *general* utility that would be applicable to the broad class of the invention.

"Substantial" - A utility that defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities.

"Credible" - Credibility is assessed from the perspective of one of ordinary skill in the art in view of the disclosure and any other evidence of record that is probative of the applicant's assertions. That is, the assertion is an inherently unbelievable undertaking or involves implausible scientific principles.

"Well-established" - a specific, substantial, and credible utility which is well known, immediately apparent, or implied by the specification's disclosure of the properties of a material, alone or taken with the knowledge of one skilled in the art.

35 U.S.C. § 101 reads as follows:

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title".

Claims 2, 3, 5, and 6 are rejected under 35 U.S.C. § 101 because the claimed invention lacks patentable utility due to its not being supported by a specific, substantial, and credible utility or, in the alternative, a well-established utility.

The claimed subject matter is not supported by a specific, substantial, and credible utility because the disclosed uses are generally applicable to broad classes of this subject matter. In addition, further characterization of the claimed subject matter would be required to identify or reasonably confirm a "real world" use. The examiner does not find an adequate nexus between the evidence of record and the asserted properties of the claimed subject matter.

The specification states that the polynucleotides are useful in the gene discovery and as markers for gene expression analysis (page 2, lines 18-26 and page 5, lines 26-35), identifying and mapping the coding regions of a genome (page 2, lines 26-35 and page 3, line 1). All of these possible uses are generic to any expressed polynucleotide from humans. In fact, the specification summarizes much of modern biotechnology, but fails to connect the specifically elected sequence (SEQ ID NO:1, the polynucleotide that encodes SEQ ID NO: 2) to any particular or specific utility.

The information disclosed in the specification about SEQ ID NO: 1, a nucleic acid that encodes SEQ ID NO: 2, is that it encodes a novel human protein (page 2, lines 9-12) which shares structural similarity with mammalian lipocalin and prostaglandin D synthase (page 2, lines 5-8). An assertion that the instant nucleic acid and amino acid sequence are included in the prostaglandin D synthase and/or lipocalin gene families is unfounded as it lacks factual support for the reasons described below.

Kanaoka et al. disclose two types of identified prostaglandin D synthases (PGDS) as lipocalin-type PGDS and hematopoietic PGDS (page 3315, col. 2, second paragraph). Kanaoka et al. disclose regions of hematopoietic prostaglandin D synthase (PGDS) which appear to have evolved from the same ancestral gene as the sigma-class GST family members (abstract and

Figure 1). These conserved regions as seen in Figure 1 of the Kanaoka et al. reference share no similarity to SEQ ID NO: 2 of the instant invention.

Blaker et al. disclose alignments of sequences of various members of the lipocalin superfamily (Figure 5). The conserved regions of these sequences in Figure 5, denoted in boxes, are not found in SEQ ID NO: 2 of the instant invention.

Flower et al. disclose alignments of sequences of various members of the lipocalin protein family (Figure 2, pages 11-12). The common core regions indicated by asterisks are not found in SEQ ID NO: 2 of the instant invention.

Failure of the claimed sequences to share sequence characteristics (i.e. conserved regions) of the lipocalin and prostaglandin D synthase gene families does not support the assertion that the claimed sequences are included in either family. As there is no conclusive evidence that the claimed sequences are from the above-mentioned families, it appears that there is no readily available, or substantial, utility for these sequences. Further research would need to be conducted to identify any real world utility that these sequences might possess.

No mention is made as to the actual function of SEQ ID NO:1, so that one skilled in the art is unable to identify any "real world" use of this nucleic acid, vector, and cell of the instant invention. The lack of establishment of substantial utility for the claimed subject matter is also noted in the specification. For example, in the assays for identifying, selecting, and validating novel molecular targets for drug discovery, the specification states that "use of these unique sequences permits direct confirmation of drug targets and recognition of drug dependent changes in gene expression that are modulated through pathways distinct from the drugs intended target," so that they can both define and monitor drug action and toxicity (page 7, lines 18-26). To find

out what stimulatory/inhibitory agents regulate what activity of the protein encoded by the nucleic acid sequence, more basic research is needed first to find out the actual function of the protein. This need for such research clearly indicates that the protein encoded by the SEQ ID NO:1 and/or its function is not disclosed as to any substantial utility. A starting material that can be used to produce a final product does not have substantial asserted utility in those instances where the final product is not supported by a specific and substantial utility. Proteins that are produced as final products from the claimed nucleic acid do not have identified specific and substantial utilities. Merely identifying and studying the properties of proteins does not define a "real world" context for use. Also, other listed utilities as summarized above or in the specification are not substantial or specific due their generic nature that can be applied to a variety of such compounds.

Neither the specification nor prior art discloses any property or activity for the claimed nucleic acid such that it would be rendered as having a "well established" utility.

Applicant should explicitly identify a specific, substantial, and credible utility for the claimed invention and establish a probative relation between any evidence of record and the originally disclosed properties of the claimed invention.

It is noted that applicant has mentioned mammalian lipocalins and prostaglandin D synthases which are known in the prior art and which share structural similarity to SEQ ID NO: 2 which is encoded by the claimed sequence of SEQ ID NO: 1 (page 2, lines 5-13). Absent factual evidence, one skilled in the art would have reason to doubt that sequence/structural similarity alone would reasonably support the assertion that the biological activity of the claimed subject matter would be the same as that of the similar sequence/structure. Furthermore, it is

unclear whether the proteins identified in the prior art have actually been tested for biological activities or whether these also are asserted biological activities based upon sequence/structural similarity to yet a different sequence. Note that it would have been well known in the art that sequence similarity does not reliably correlate to structural similarity and that structural similarity does not reliably result in similar or identical biological activities. For example, it would have been well known that even a single nucleotide or amino acid change or mutation can destroy the function of the biomolecule in many instances, albeit not in all cases. In the absence of factual evidence characterizing the structural and functional components of the biomolecule, the effects of these changes are largely unpredictable as to which ones will have a significant effect and which ones will be silent mutations having no effect. Several publications document the unpredictability of the relationship between sequence, structure, and function, although it is acknowledged that certain specific sequences have been found to be conserved in biomolecules having related function following a significant amount of further research. See Lopez et al. (Molecular Biology, 32:881-891,1999); Attwood (Science, 290:471-473, 2000); Gerhold et al. (BioEssays, 18(12):973-981, 1996); Wells et al. (Journal of Leukocyte Biology, 61(5):545-550, 1997); and Russell et al. (Journal of Molecular Biology, 244:332-350, 1994). However, this level of factual evidence is absent here.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located

in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The CM1 Fax Center number is (703) 872-9306.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (703) 308-6043. The examiner can normally be reached Monday through Thursday from 8 A.M. to 6:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached on (703) 308-4028.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instruments Examiner Tina Plunkett whose telephone number is (703) 305-3524 or to the Technical Center receptionist whose telephone number is (703) 308-0196.

January 7, 2004

ARDIN H. MARSCHEL
SUPERVISORY EXAMINER